7

PW-XXXXX A D:Change Letter by by by by Date D.C.N. & DESCRIPTION

ML605 to USRP FMC Card

Note: Designed to work on the Xilinx ML605 HPC FMC Slot

However, wired for other configurations: ML605 HPC - Full Functionality ML605 LPC - 1 Mictor, 1 miniSAS

SP605 LPC - 1 Mictor, 1 minisAs SP601 LPC - 1 Mictor

DATE

FILENAME

PCB PW#

SHEET#

LINCOLN LABORATORY

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

LEXINGTON, MASSACHUSETTS

FOR UNITED STATES GOVERNMENT USE ONLY

SCALE

SCALE

THERMAL

THERMAL

D

MECH. ANALYSIS

PROG-TASK

DMG
S17P
DWG NO.

REV

FMC IO Connections

1 A1 GND	1 B1	1 C1 GND	1 01	E1 GND	1 F1	1 G1 GND ■	1 H1	1 J1 GND	1 <u>K1</u>
A2 DP1_M2C_P	B2 GND	2 C2 DP0 C2M P	D2 GND	2 E2 HA_01_P_CC	F2 GND	G2 CLK0_C2M_P	2 H2	J2 CLK1 C2M P	2 K2 GND
A3 DP1_M2C_N	B3 GND	C3 DPO_C2M_N	D3 GND	3 E3 HA_01_N_CC	F3 GND	G3 CLKO_C2M_N	H3 GND	J3 CLK1_C2M_N	K3 GND
A4 GND	B4	4 C4 GND	4 D4 GBTCLK0_M2C_P	E4 GND	4 F4 HA_00_P_CC	4 G4 GND	H4 CLK0_M2C_P	J4 GND	4 K4 CLK1_M2C_P
A5 GND	_ B5	C5 GND	D5 GBTCLK0_M2C_N	E5 GND	F5 HA_00_N_CC	G5 GND	H5 CLKO_M2C_N	5 J5 GND	K5 CLK1 M2C N
A6 DP2_M2C_P	B6 GND	6 C6 DP0_M2C_P	D6 GND	6 HA_05_P	F6 GND	G6 LA00_P_CC	6 H6 GND	6 16 на_03_р	K6 GND
A7 DP2 M2C N	B7 GND	7 C7 DP0 M2C N	D7 GND	7 E7 HA 05 N	7 F7 HA 04 P	G7 LA00 N CC	H7 LA02_P	J7 HA 03 N	7 K7 HA 02 P
A8 GND	7 B8	2 C8 GND	8 D8 LA01 P CC	E8 GND	8 HA_04_N	G8 GND	8 H8 LA02_N	J8 GND	8 K8 HA 02 N
A9 GND	8 ————————————————————————————————————	C9 GND	p9 La01 N CC	9 E9 HA_09_P	F9 GND	G9 LA03_P	H9 GND	9 HA_07_P	% K9 GND
10 A10 DP3 M2C P	10 B10 GND	10 C10 LA06 P	10 D10 GND	10 HA 09 N	10 HA 08 P	10 G10 LA03 N	10 H10 LA04 P	10 HA 07 N	10 K10 HA 06 P
10 A11 DP3 M2C N	10 B11 GND	11 C11 LA06 N	11 D11 LA05 P	10 ==	11 F11 HA_08_N	10 G11 GND	10 H11 LA04_N	10 11 GND	10 K11 HA_06_N
11 A12 GND	11 B12 DP7 M2C P	11 C12 GND	11 12 D12 LA05 N	11 E12 HA 13 P	11 F12 GND	11 G12 LA08 P	11 H12 GND	11 512 GA2 11 P	11 K12 GND
12 A13 GND	12 B13 DP7 M2C N	12 C13 GND	12 13 D13 GND	12 HA 13 N	12 F13 HA 12 P	12 G13 LA08 N		12 J13 HA 11 N	12 K13 HA 10 P
13 A14 DP4_M2C_P	13 B14 GND	13 C14 LA10_P	13 GND 14 D14 LA09_P	13 HA 13 N 14 E14 GND	13 HA 12 F	13 G14 GND	13 <u>LA07 P</u> 14 <u>H14 LA07 N</u>	13 14 GND	
		14 C15 LA10 N			14 11 11 11 11 11 11 11 11 11 11 11 11 1				14 K14 HA_10_N
15 A15 DP4 M2C N	15 B15 GND 16 B16 DP6 M2C P	15 C16 GND	15 LA09 N	15 E15 HA 16 P		15 G15 LA12 P	15 H15 GND	15 HA 14 P	15 K15 GND
16 A16 GND	±0		16 D17 F112 D	16 E17 CND	16 F16 HA_15_P	16 G17 GND	16 H16 LA11_P	16 J16 HA_14_N	16 K16 HA 17 P CC
17 A17 GND	17 B17 DP6 M2C N	17 C19 FN14 D	17 D19 LA13 P	17 E19 UN 20 D	17 F17 HA 15 N	17 G19 TN16 P	17 H17 LA11 N	17 J17 GND	17 K17 HA 17 N CC
18 A18 DP5 M2C P	18 B18 GND	18 C18 LA14 P	18 D18 LA13 N	18 E18 HA 20 P	18 F18 GND	18 G18 LA16 P	18 H18 GND	18 HA 18 P	18 K18 GND
19 A19 DP5_M2C_N	19 B19 GND	19 C19 LA14_N	19 D19 GND	19 HA_20_N	19 ^{F19} HA_19_P	19 G19 LA16_N	19 H19 LA15_P	19 HA 18 N	19 K19 HA_21_P
20 A20 GND	20 B20 GBTCLK1 M2C P	20 GND	D20 LA17 P CC	E20 GND	F20 HA 19 N	20 GND	20 H20 LA15 N	20 J20 GND	20 K20 HA 21 N
21 A21 GND	21 B21 GBTCLK1 M2C N	21 C21 GND	D21 LA17 N CC	21 E21 HB 03 P	21 F21 GND	21 G21 LA20_P	21 H21 GND	21 J21 HA 22 P	21 K21 GND
22 A22 DP1_C2M_P	22 B22 GND	22 <u>C22 LA18_P_CC</u>	22 D22 GND	22 E22 HB_03_N	22 F22 HB_02_P	22 <u>G22 LA20 N</u>	22 H22 LA19_P	22 J22 HA_22_N	22 K22 HA 23 P
23 A23 DP1 C2M N	23 B23 GND	23 <u>C23 LA18 N CC</u>	23 <u>D23 LA23 P</u>	23 E23 GND	23 F23 HB 02 N	23 GND	23 H23 LA19_N	23 J23 GND	23 K23 HA_23 N
24 A24 GND	24 B24	24 C24 GND	24 <u>LA23_N</u>	24 E24 HB_05_P	24 F24 GND	24 G24 LA22_P	24 H24 GND	24 J24 HB_01_P	24 K24 GND
25 GND	25 B25	25 GND	25 D25 GND	25 <u>HB 05 N</u>	25 F25 HB 04 P	25 <u>LA22 N</u>	25 H25 LA21 P	25 J25 HB 01 N	25 K25 HB 00 P CC
26 A26 DP2 C2M P	26 B26 GND	26 C26 LA27 P	26 <u>D26 LA26 P</u>	26 E26 GND	26 F26 HB_04_N	26 GND	26 <u>H26 LA21 N</u>	26 GND	26 K26 HB 00 N CC
27 A27 DP2_C2M_N	27 B27 GND	27 <u>C27 LA27_N</u>	27 D27 LA26_N	27 E27 HB_09_P	27 F27 GND	27 G27 LA25_P	27 H27 GND	27 <u>J27 HB_07_P</u> ■	27 K27 GND
28 A28 GND	28 B28	28 C28 GND	28 D28 GND	28 E28 HB_09_N	28 F28 HB 08 P	28 G28 LA25 N	28 H28 LA24_P	28 <u>J28 HB_07 N</u>	28 K28 HB_06_P_CC
29 A29 GND	29 B29	29 C29 GND	29 029	29 E29 GND	29 F29 HB_08_N	29 GND	29 H29 LA24_N	29 J29 GND	29 K29 HB_06_N_CC
30 A30 DP3 C2M P	30 B30 GND	30 <u>C30</u>	30 D30	30 E30 HB_13_P	30 F30 GND	30 G30 LA29 P	30 H30 GND	30 <u>J30 нв 11 р</u>	30 K30 GND
31 A31 DP3 C2M N	31 B31 GND	31 <u>C31</u>	31 <u>D31</u>	31 E31 HB_13_N	31 F31 HB 12 P	31 G31 LA29_N	31 H31 LA28_P	31 <u>J31 HB_11_N</u>	31 K31 HB_10_P
32 A32 GND	32 B32 DP7_C2M_P	32 C32 GND	32 <u>D32</u>	32 E32 GND	32 F32 HB_12_N	32 GND	32 H32 LA28_N	32 GND	32 K32 HB_10_N
33 GND	33 B33 DP7 C2M N	33 GND	33 <u>D33</u>	33 HB_19_P	33 GND	33 G33 LA31_P	33 H33 GND	33 HB_15_P	33 K33 GND
34 A34 DP4_C2M_P	34 B34 GND	34 <u>C34</u>	34 D34	34 E34 HB_19_N	34 F34 HB_16_P	34 G34 LA31_N	34 H34 LA30_P	34 J34 HB_15_N	34 K34 HB_14_P
35 A35 DP4 C2M N	35 B35 GND	35 <u>C35</u>	35 D35	35 E35 GND	35 F35 HB 16 N	35 GND ■	35 H35 LA30 N	35 <u>J35 GND</u> ■	35 K35 HB_14_N
36 A36 GND	36 B36 DP6_C2M_P	36 C36 GND	36 D36	36 E36	36 F36 GND ■	36 G36 LA33_P ■	36 H36 GND ■	36 J36 HB_18_P ■	36 K36 GND
37 A37 GND	37 B37 DP6_C2M_N	37 <u>C37</u>	37 D37 GND	37 E37	37 F37 HB_20_P ■	37 G37 LA33_N	37 H37 LA32_P	37 <u>J37 нв_18_</u> N	37 K37 HB_17_P_CC
38 A38 DP5_C2M_P	38 B38 GND	38 C38 GND	38 D38	38 E38 GND	38 F38 HB 20 N ■	38 GND ■	38 H38 LA32 N	38 J38 GND	38 K38 HB 17 N CC
39 A39 DP5_C2M_N	39 B39 GND	39 039	39 D39 GND	39 E39 +2.5V	° 39 F39 GND ■	g39 +2.5v G39 +2.5v	N 39 H39 GND ■	ÿ 39 <u>139</u>	39 K39 GND
40 A40 GND	40 840	40 GND	40 D40	40 GND	40 F40 +2.5V	0° 40 GND ■	40 +2.5V	0 1 40 GND ■	40 K40
HPC Only	HPC Only	HPC & LPC	HPC & LPC	HPC Only	HPC Only	HPC & LPC	HPC & LPC	HPC Only	HPC Only

D-=

Mictor Connectors

LPC USRP Mictor

	√ J2 −1	2— J2>—	
	√J2 −3	4— д2	
LA00_P_CC	√ J 2 —5	6— д2	LA01_P_CC
LA00_N_CC	J2 −7	8— д2	LA09_N
LA02_N	J2 −9	10- д2	LA09_P
LA02_P	J2 —11	12— J2	LA10_P
LA03_N	J2 -13	14— ј2	LA11_N
LA03_P	J2 -15	16- J2	LA11_P
LA04_N	J2 -17	18- J2	LA12_N
LA04_P	J2 —17	20— Ј2	LA12_P
LA05_N	J2 -19 J2 -21	20— 52	LA13_N
_ LA05_P	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	24— J2	LA13_P
_ LA06 N	J2 −25	24— J2	LA14 N
LA06 P	>		LA14 P
LA07 N	√ J2 −27	28— J2	 LA15_N
LA07 P	√J2 —29	30— J2	 LA15 P
LA08 N	√J2 −31	32— J2	LA16 N
LA08 P	√ J2 −33	34— J2	LA16 P
LA01 N CC	√ J2 −35	36— J2	LA10 N
_ GND	√ J2 −37	38— Ј2	
	≺ J2 −39		
GND	≺ J2 −40		
■ GND	√ J2 −41		
GND	√ J2 −42		
GND	√ J2 −43		

HPC USRP Connector

	√ J3 −1	2— J3	
	∕ J 3 −3	4— дз>—	
HA_00_P_CC	∂ ј3 —5	6— дз	HA_01_P_CC
HA 00 N CC	Ј 3 −7	8— дз	HA_09_N
HA_02_N	јз −9	10- дз	HA_09_P
HA_02_P	J3 —11	12— д3	HA_10_P
HA_03_N	J3 —13	14- J3	HA_11_N
HA_03_P	J3 —15	14 U3 16- J3	HA_11_P
HA_04_N	J3 —17	18— дз	HA_12_N
HA_04_P	J3 −19	20- д3	HA_12_P
HA_05_N	J3 −21	20 03	HA_13_N
HA_05_P	J3 -23	24— J3	HA_13_P
HA_06_N	јз 25 јз −25	24 03	HA_14_N
HA_06_P	J3 -27	28- д3	HA_14_P
HA_07_N	Ј3 —29	30- д3	HA_15_N
HA_07_P	J3 -31	32— д3	HA_15_P
HA_08_N	J3 -33	34- J3	HA_16_N
HA_08_P	J3 —35	36- д3	HA_16_P
HA_01_N_CC	J3 −37	38- д3	HA_10_N
GND	J3 −39	30 03/	•
_ GND	>		
_ GND	√ J3 −40		
	√ J3 − 41		
GND	√ J3 − 42		
■ GND	√ J3 −43		

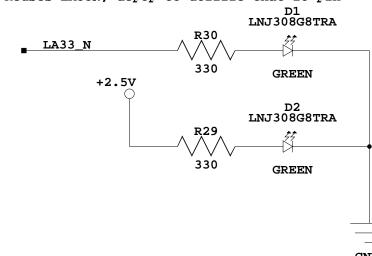
LPC Spare IO Connector

	√ ј4 -	-1	2— Ј4	
	>	_	/	
_ LA23_P	→ J4 -	_	4— J4—	LA31_P
LA23_N	> -	-5 -	6— Ј4	LA31_N
LA24_P	> -	-7	8- J4	LA32_P
LA24_N	> -	-	10- J4	LA32_N
-	─ ∫ J4 -	-11	12- J4>	<u> </u>
LA25_P	√ Ј4 -	-13	14- J4>	LA33_P
LA25_N	— ∕Ј4 -	-15	16- J4>	LA33_N
LA26_P	√ ј4 -	-17	18- J4	CLK0_M2C_P
LA26_N	 √ J4 -	-19	20- J4	CLK0_M2C_N
_ LA27_P	√ J4 -		22- J4	CLK0_C2M_P
LA27_N			24- J4	CLK0_C2M_N
LA28_P	>	-	26- J4	GBTCLK0_M2C_P
LA28_N	> -	-	28- J4	GBTCLK0_M2C_N
LA29_P	>		30- J4	_
LA29_N	> -	_	32- J4	
_ LA30_P	>	-	34- J4	
_ LA30_N	> -		<	
GND	>		36- J4	
■ GND	─ ∫ J4 -	-37	38- J4>	
	√ Ј4 -	-39		
GND	√ Ј4 -	-40		
GND	√ ј4 -	-41		
GND	√ J4 -	-42		
GND	 J4 −	-43		

HPC Spare IO Connector

─√ J8 − 1	2— J8>	
— ∢ л 8 −3	4— J8	
——∕ ј 8 —5	6— Ј8	DP1_C2M_P
—— ∀ J8 −7	8— д8	DP1_C2M_N
—— ∀ J8 —9	10— д8	DP2_C2M_P
		DP2_C2M_N
>		DP3_C2M_P
>		DP3_C2M_N
		DP4_C2M_P
>		DP4_C2M_N
>		DP5_C2M_P
		DP5 C2M N
>		DP6 C2M P
>		DP6 C2M N
>		DP7 C2M P
>		DP7 C2M N
> -		GBTCLK1 M2C P
── ∫ J8 − 33	34—J8	
─ ─ √ J8 −35	36— Ј8	GBTCLK1_M2C_N
— √ Ј8 − 37	38— J8	CLK1_C2M_N
— √ Ј 8 −39	,	
── J8 −40		
J8 −41		
\00 ±3		
	J8 -3 J8 -5 J8 -7 J8 -9 J8 -11 J8 -13 J8 -15 J8 -17 J8 -19 J8 -21 J8 -23 J8 -25 J8 -27 J8 -29 J8 -31 J8 -33 J8 -35 J8 -37 J8 -39 J8 -40	J8 -3 4 J8 J8 -5 6 J8 J8 -7 8 J8 J8 -9 10 J8 J8 -11 12 J8 J8 -13 14 J8 J8 -15 16 J8 J8 -17 18 J8 J8 -19 20 J8 J8 -21 22 J8 J8 -23 24 J8 J8 -25 26 J8 J8 -27 28 J8 J8 -31 32 J8 J8 -31 32 J8 J8 -35 36 J8 J8 -37 38 J8 J8 -40 J8 -42

Power and IO LED, NOTE: Reuses LA33N, depop to utilize that IO pin

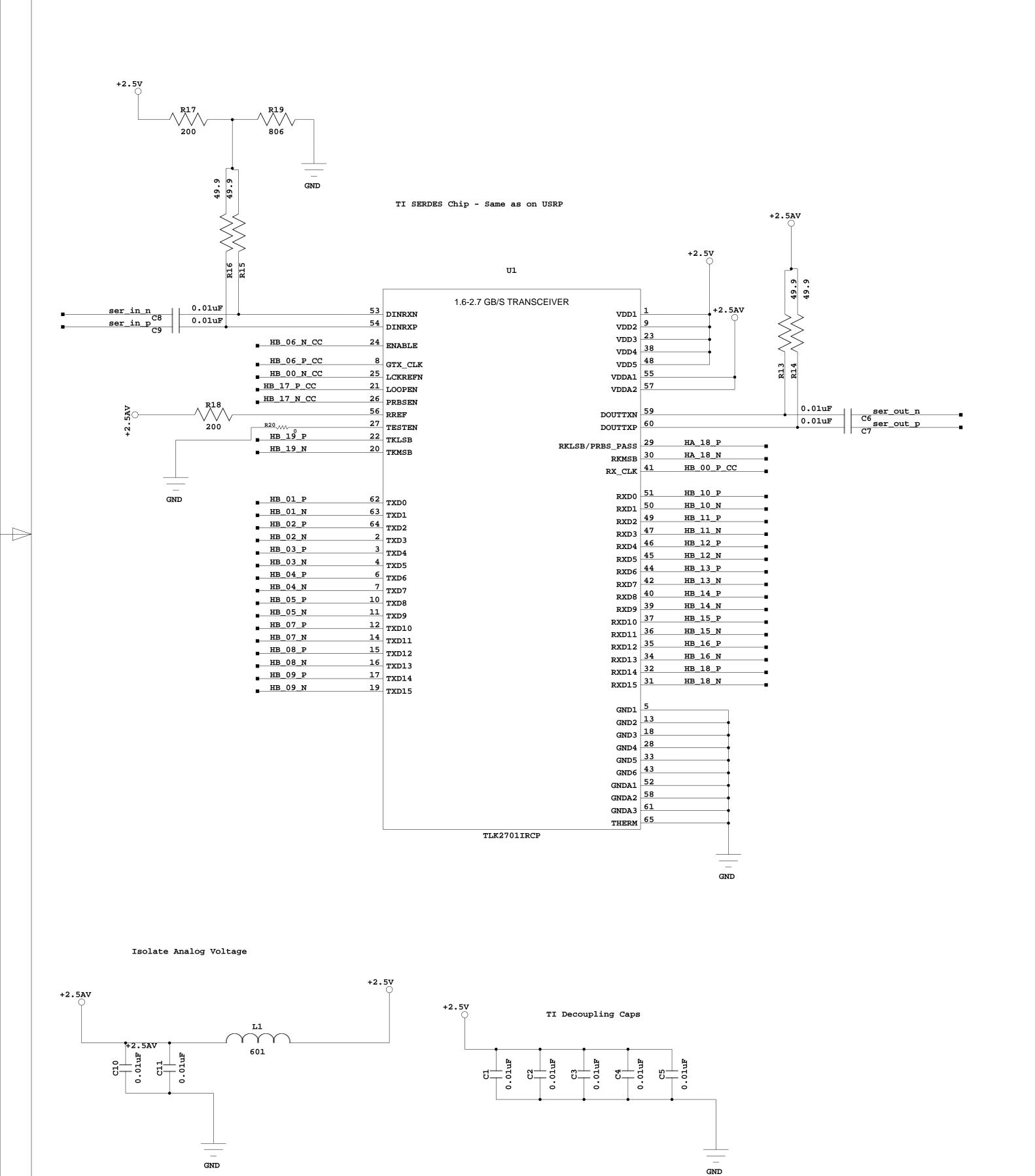


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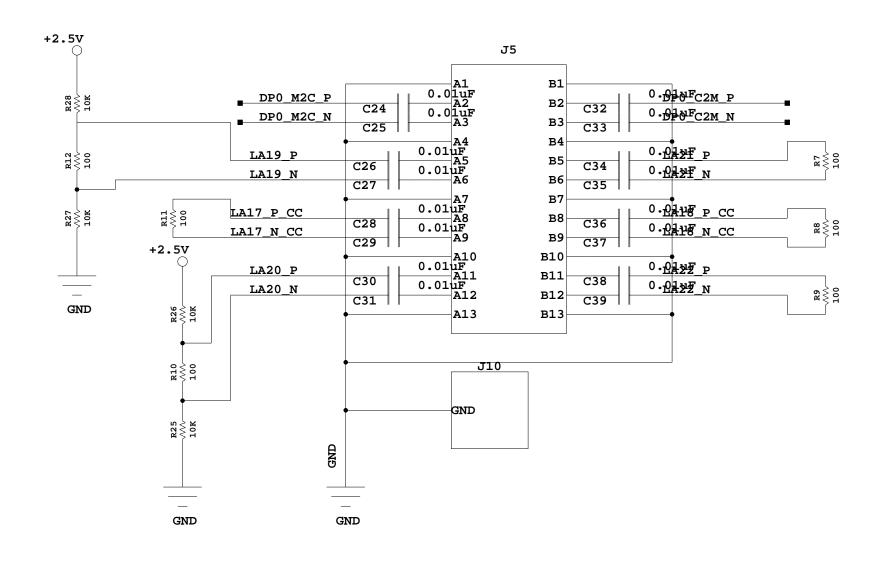
DWG
SIZE

DWG NO.

SERDES Connections



LPC miniSAS Connector - Uses the Xilinx GTX Ports



HPC minisAS Connector - Uses USRP TI SERDES Chip

